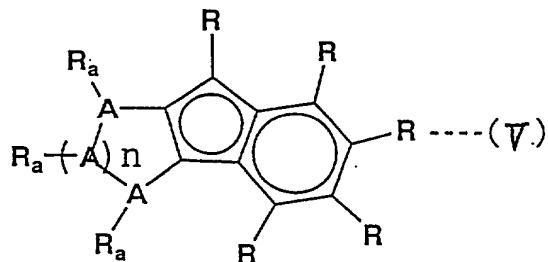
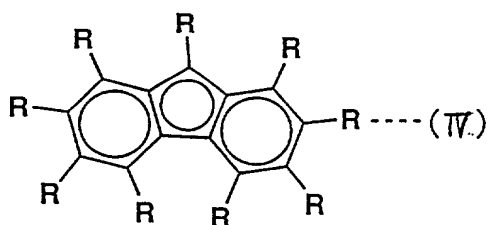
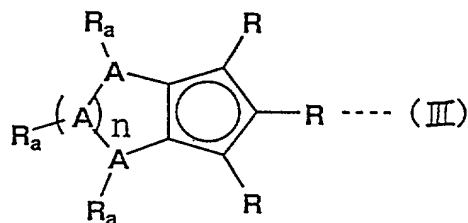
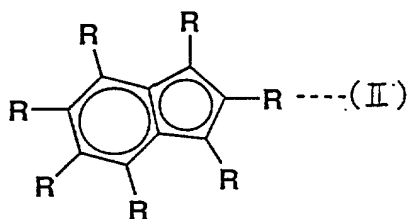
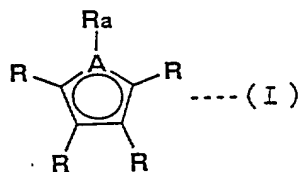
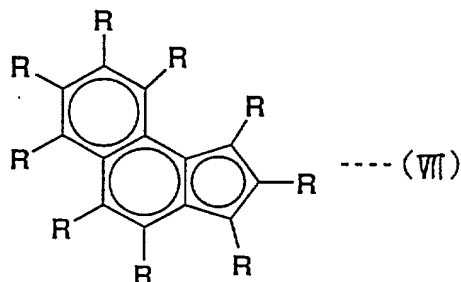
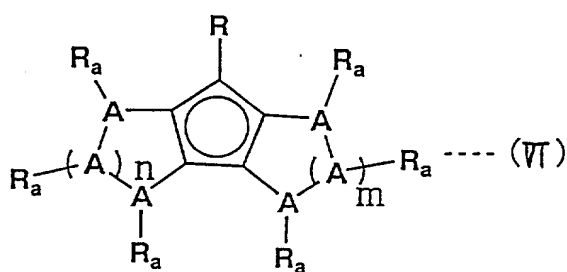


metal of Groups 8 to 10 of the Periodic Table;  $L^1$  and  $L^2$  each represent a coordination-bonding ligand;  $X^1$ ,  $Y^1$ ,  $Z^1$ ,  $W^1$  and  $U^1$  each represent a covalent-bonding or ionic-bonding ligand; and  $L^1$ ,  $L^2$ ,  $X^1$ ,  $Y^1$ ,  $Z^1$ ,  $W^1$  and  $U^1$  may be bonded to each other to form a cyclic structure.

13. The catalyst of above 12 for copolymerization of olefins and styrenes, wherein, in the transition metal compound (A) of formula (4), the group  $(C_5H_5-eR^{11}_e)$  is represented by any of the following general formulae (I) to (VII):





wherein A represents an element of Group 13, 14, 15 or 16, and plural A's may be the same or different; R represents a hydrogen atom, a halogen atom, an aliphatic hydrocarbon group having from 1 to 30 carbon atoms, an aromatic hydrocarbon group having from 6 to 30 carbon atoms, an alkoxy group having from 1 to 30 carbon atoms, an aryloxy group having from 6 to 30 carbon atoms, a thioalkoxy group having from 1 to 30 carbon atoms, a thioaryloxy group having from 6 to 30 carbon atoms, an amino group, an amido group, a carboxyl group, or an alkylsilyl or alkylsilylalkyl group having from 3 to 30 carbon atoms, and R's may be the same or different, and may be optionally bonded to each other to form a cyclic structure; a represents 0, 1 or 2; and n and m each represent an integer of at least 1.

14. A method for producing olefin-styrene copolymers, which comprises copolymerizing olefins and styrenes in the presence of the copolymerization catalyst of any of above 1 to 13.

BEST MODES OF CARRYING OUT THE INVENTION

The invention is described below with reference to its embodiments.

I. Catalyst for copolymerization of olefins and styrenes:

1. Components of catalyst for copolymerization of olefins and styrenes:

The catalyst of the invention for copolymerization of olefins and styrenes comprises (A) a transition metal compound, (B) an oxygen-containing compound and/or a compound capable of reacting with a transition metal compound to form an ionic complex, and (C) a compound of formula (1) which will be described in detail hereinunder, and optionally (D) an alkylating agent. The constituent components are described below.

(A) Transition metal compound:

Various types of transition metal compounds are usable as the component (A) in the invention, but preferred are transition metal compounds of Groups 4 to 6 of the Periodic Table, or transition metal compounds of Groups 8 to 10 thereof. As the transition metal compounds of Groups 4 to 6 of the Periodic Table, preferred are those of the following general formulae (2) to (5). As the transition metal compounds of Groups 8 to 10 of the Periodic Table, preferred are those of the following general formula (6).

